

REMARKS

Claims 1, 3, 4, 6, 7 and 11-17 are in this application and are presented for consideration. By this Amendment, Applicant has amended claim 1. Applicant has also canceled withdrawn claims 9 and 10 subject to Applicant's right to file a divisional application covering the features found in those claims. New claims 11-17 have been added.

Claim 1 has been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant has amended claim 1 to clarify that a metal plate covers the entire external peripheral surface of the cylindrical body. It is Applicant's position that claim 1 as now amended is clear and satisfies the requirements of the statute.

Claims 1, 3, 4, 6 and 7 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Sawada et al. (WO 98/58704) in view of Karakawa (U.S. 4,830,061).

The present invention relates to a fire protection zone penetrating member. The fire protection zone penetrating member comprises a cylindrical body made of thermally expanding rubber. The cylindrical body has an oval cross section. This advantageously allows the fire protection zone penetrating member to easily attach to a wide variety of pipes, cables or the like that have varying diameters. The thermally expanding rubber cylindrical body is surrounded by a metal plate such that the metal plate completely surrounds the outer surface of the cylindrical body. The metal plate surrounding the cylindrical body of thermally expanding rubber advantageously prevents one fire protection zone penetrating member from interfering with an

adjoining fire protection zone penetrating member. This advantageously ensures that each fire protection zone penetrating member installed in piping, cable or the like expands and clogs the through-hole so that flames, gas or smoke do not spread via the through-holes in the piping or the cable. The prior art as a whole fails to disclose such features or advantages.

Sawada et al. discloses a first sheet comprising a lamination of one or more rubber sheets and one or more metallic sheets. The rubber sheets have an oxygen index of 28 or more, an amount of generated hydrogen halide gas of 0 to 350 mg/g and a thickness of 0.1 to 3 mm. The metallic sheets have a thickness of 15 to 200 μm . The first sheet provides a fire spreading preventing effect not lower than a level, at which wires and cables which are burned completely in a combustion test of IEC 332-3 category C are not burned completely even in a combustion condition of category A. In a preferred embodiment, a laminated rubber sheet composed of a thermally expanding rubber mixture having a degree of expansion of four times that of the above rubber sheet and fabrics may be used. In another embodiment, a first protection construction is provided in which portions through which cables extend are closed by overlapping first and second fire sheets, and a non-curable heat resisting seal is filled in the overlapping portions, uses a laminated sheet composed of a flame retardant rubber sheet and a metallic sheet as the first and second fire sheets. The rubber sheet and metallic sheet can be used to surround cables laid in a pit and sandbags can be placed on the fire sheet.

Sawada et al. fails to teach and fails to suggest the combination of a cylindrical body composed of thermally expanding rubber that is completely surrounded by a cylindrical metal plate. At most, Sawada et al. discloses a sheet of rubber and metal that is wrapped around

wires or cables 4. However, Sawada et al. fails to disclose a metal plate that surrounds a cylindrical body made of thermally expanding rubber having a longitudinal extending slot and a V-cut insertion slot as claimed. The longitudinally extending slot and the V-cut insertion slot are significant in the present invention because they provide for particular handling advantages. The V-cut inlet section of the cylindrical body advantageously allows the fire protection zone penetrating member to be applied to the pipe or the like so that the expanding slot gradually opens so that the pipe or the like can be easily accommodated therein. A user can easily removed the fire zone penetrating member by simply grabbing the V-cut inlet section. This advantageously makes the fire zone penetrating member easy to apply and remove from pipes, cables and the like. Sawada et al. fails to disclose such advantages since Sawada et al. merely directs the person of ordinary skill in the art towards a fire sheet comprising one or more rubber sheets and one or more metallic sheets that are wrapped about wires or cables. Sawada et al. is void of any suggestion for a cylindrical body composed of thermal expanding resin as claimed. In fact, Sawada et al. provide absolutely no teaching for a cylindrical body having an oval cross section as claimed. As such, the prior art as a whole takes a different approach and fails to teach each feature of the claimed combination.

Karakawa discloses a plastics cover for a piping which comprises a plastics cover body of a wide strip-like shape and a substantially T-shaped rib arranged on one side edge of the cover body. The rib includes a leg portion connected to the cover body and a wing portion so that an inner groove and an outer groove is defined between the wing portion and the cover body. Mounting of the cover on a pipe is carried out by interengaging a first engagement

projection on the inner surface of the wing portion and a second engagement projection on the outer surface of the other side edge of the cover body. The cover body is cut downwardly at the upper portion of the one side edge through a predetermined distance. The cut extends from a radius or curved portion formed at the upper end of the edge to an inner position of the rib.

Karakawa fails to provide any teaching or suggestion for a cylindrical body composed of thermal expanding resin having an oval cross section. At most, Karakawa discloses a cover body 3 having a cylindrical cross section. In contrast to Karakawa, the cylindrical body of the present invention has an oval cross section. This advantageously allows the fire protection zone penetrating member to be easily applied to pipes or cables of varying external diameters. The fact that the cylindrical body has an oval cross section is significant in the present invention because it advantageously allows the fire protection zone penetrating member to be connected to pipes or cables having a diameter that is equal to an inner diameter of the fire protection zone penetrating member or to pipes or cables having a diameter greater than the inner diameter of the fire protection zone as shown in Figures 14 and 15 of the present application. Compared with the present invention, Figure 1A of Karakawa clearly shows that the cover body 3 has a cylindrical cross section and not an oval cross section as claimed. Further, the references provide no suggestion of using the teachings of Karakawa to modify the structure of Sawada et al. As such, the prior art as a whole takes a different approach and fails to direct the person of ordinary skill in the art towards each feature of the claimed combination. Accordingly, Applicant respectfully requests that the Examiner favorably consider claim 1 as now presented and all claims that depend thereon.

Applicant has added new claims 11-17. New independent claim 11 provides for features similar to amended claim 1, but in different claim language. New independent claim 14 highlights that a plurality of metal plates are adhered to the external surface of the cylindrical body. Dependent claims 12, 13 and 15-17 have been added to further clarify the features of the invention. Applicant respectfully requests that the Examiner favorably consider new claims 11-17.

Favorable consideration on the merits is requested.

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